

Applicant: Yao Wang, et al.
U.S.S.N.: 10/017,304
Filing Date: December 11, 2001
EMC Docket No.: EMC-01-201

In the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the Application.

Listing of Claims:

1. (Currently amended) A method, operable on a computer system, for managing network resources for copying data stored on a first data storage system to a second data storage system in a data replication process, wherein each data storage system includes an array of data storage devices on which data involved in the copying is stored, the method comprising the computer-executed steps of:

requesting from a server for services on a network, an allocation of bandwidth for data copying from the first data storage system to the second data storage system over the network, said bandwidth allocation based on an estimate of the data to be copied, a number of invalid tracks between said first and second data storage systems, and a known time period in which to copy said data;

copying data in response to the bandwidth allocation from the server based on the request;

monitoring network traffic performance characteristics during the data copying; and responsive to the monitored network traffic characteristics, selectively requesting an effect on the bandwidth allocation.

2. (Original) The method of claim 1, wherein the effect requested is to increase bandwidth allocation.

3. (Previously presented) The method of claim 1, wherein the request is in accordance with a Java-based protocol.

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4. (Previously presented) The method of claim 1, wherein the effect requested is to increase the bandwidth allocation based on not meeting at least one performance criterion.
5. (Previously presented) The method of claim 4, wherein the at least one performance criterion is a predetermined data transfer rate.
6. (Cancelled)
7. (Previously presented) The method of claim 1, wherein monitored network traffic characteristics includes information regarding packet latency.
8. (Previously presented) The method of claim 1, wherein the monitored network traffic characteristics includes information regarding packet loss.
- 9.-15. (Cancelled)
16. (Previously presented) The method of claim 1, wherein the data replication is carried out in accordance with a replication policy.
17. (Original) The method of claim 16, wherein the replication policy defines replication groups includes devices distributed between the first and second data storage systems and the data replication process is completed when all devices in the replication groups are synchronized.
18. (Currently amended) A networked computer system for managing network resources for copying of data from a first data storage system to a second data storage system in a data replication process, wherein each data storage system includes an array of data storage devices on which data involved in the copying is stored, the network computer system comprising:
- a server for providing services over the network; and
 - a network communication device capable of enabling the method steps of:

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requesting from the server an allocation of bandwidth for data copying from the first data storage system to the second data storage system over the network based on an estimate of the data to be copied, a number of invalid tracks between said first and second data storage systems, and a known time period in which to copy said data;

copying data in response to the bandwidth allocation from the server based on the request;

monitoring network traffic performance characteristics during the data copying;
and

responsive to the monitored network traffic characteristics, selectively requesting an effect on the bandwidth allocation.

19 (Cancelled)

20. (Previously presented) The system of claim 19, wherein the request is in accordance with a Java-based protocol.

21. (Previously presented) The system of claim 18, wherein the effect requested is to increase bandwidth allocation based on not meeting at least one performance criterion.

22. (Previously presented) The system of claim 21, wherein the at least one performance criterion is based on a predetermined data transfer rate.

23. (Cancelled)

24. (Previously presented) The system of claim 18, wherein the monitored network traffic characteristics include information regarding packet latency.

25. (Previously presented) The system of claim 18, wherein the monitored network traffic characteristics including information regarding packet loss.

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26. (Previously presented) The system of claim 18, wherein the data replication is carried out in accordance with a replication policy.

27. (Original) The system of claim 26, wherein the replication policy defines replication groups including devices distributed between the first and second data storage systems and the data replication process is completed when all devices in the replication groups are synchronized.

28. (Currently amended) A program product for managing network resources for copying data stored in a data storage environment, the program product being from management of data and being comprised of:

computer-executable logic provided from a computer-readable medium, when loaded into a computer system causes the computer system to execute the steps of:

requesting from a server for services on a network, an allocation of bandwidth for data copying from a first data storage system to a second data storage system over the network based on estimate of the data to be copied, a number of invalid tracks between said first and second data storage systems, and a known time period in which to copy said data;

copying data in response to the bandwidth allocation from the server based on the request;

monitoring network traffic performance characteristics during the data copying;
and

responsive to the monitored network traffic characteristics, selectively requesting an effect on the bandwidth allocation.